



FROM THE EDITOR

DR. ANNALISA C CHRISTIE, University of the Highlands and Islands.

I am pleased to announce that the newsletter has now been allocated an ISSN (International Standard Serial Number). This issue includes a range of papers from Europe, the Near East, India and beyond, highlighting the diversity of ongoing malacological research. 2014 was a very busy year for archaeomalacology conferences with the AEA spring conference/ Conchological Society meeting; the Sea People Conference; and several shell-based sessions, papers and posters at the 12th ICAZ Meeting. Details of the forthcoming AMWG workshop can be found on Page 25. If you'd like to contribute, email annalisa.christie@gmail.com.

All opinions expressed in the newsletter are those of the authors and not necessarily those of the editor or online hosts. Current and previous issues of the newsletter are available at <http://archaeomalacology.com> and <https://archive.org/details/AMWGNewsletter24>.

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NOTE ON AQUATIC MOLLUSCS RECOVERED DURING THE EXCAVATION OF HORVAT KARKUR 'ILLIT, ISRAEL

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ACKNOWLEDGEMENTS

I would like to thank Prof. Pau Figueras (Ben-Gurion University of the Negev) for entrusting me with the archaeomalacological object and Oz Rittner (The Steinhardt Museum of Natural History, Tel Aviv University) for the excellent photograph of the shell fragment.

INTRODUCTION

The aquatic molluscs recovered during the excavation of Horvat Karkur 'Illit, carried out by Prof. Pau Figueras during the years 1989-1995, were published by Mienis (2004a). Nine different species were found among the remains of the Byzantine cemetery and church. Marine species from the Mediterranean Sea were represented by *Erosaria spurca* (Linnaeus, 1758), *Hexaplex trunculus* (Linnaeus, 1758), *Glycymeris nummaria* (Linnaeus, 1758) [as *Glycymeris insubrica* (Brocchi, 1814), a junior synonym], *Spondylus gaederopus* Linnaeus, 1758, *Acanthocardia tuberculata* (Linnaeus, 1758) and *Donax trunculus* Linnaeus, 1758; the Red Sea but more likely the Indian Ocean was represented by a single species *Monetaria moneta* (Linnaeus, 1758), while two freshwater bivalves from the Nile River in Egypt were also among the recovered material: *Mutela dubia* (Gmelin, 1791) and *Chambardia rubens arcuata* (Cailliaud, 1823) [as *Aspatharia rubens* (Lamarck, 1819)].

When the monograph dealing with Horvat Karkur 'Illit (Figueras, 2004) containing the short archaeomalacological report was in print I received from the excavator still a single shell which had

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been mislaid. Since this item belonged to a species not mentioned in the original report, it is briefly dealt with in this note.

RESULTS

The shell fragment had been found during the sixth season (1994) in Area B in the lower layer of a garbage heap (Locus 3003). In the upper layer of that garbage heap (Locus 3001) most of the interesting pieces of marble had been found.

The shell fragment (Fig. 1) had a length of 53.12 mm and at the upper end it had a width of 24.39 mm and at the lower end it measured 9.98 mm. This conical, highly polished fragment was immediately recognized as part of the internal columella of Seba's Spider Conch *Lambis truncata sebae* (Kiener, 1843). The latter is one of the largest gastropods inhabiting the shallow waters bordering the Arabian Peninsula including the Red Sea with the bays of Aqaba and Suez.



Similar fragments of *Lambis truncata sebae* had been recovered in large numbers during the excavation of Nessana (Auja el-Hafir), in the southwestern Negev near the border with Egypt (Mienis, 2004b-c). Also in Nessana most of the conical, highly polished fragments were encountered in a Byzantine context, more particularly among the remains of a church. The purpose of these conical fragments has so far remained unknown.

FIG. 1: [LEFT] PART OF THE COLUMELLA OF SEBA'S SPIDER CONCH *LAMBIS TRUNCATA SEBAE* FOUND DURING THE EXCAVATION OF HORVAT KARKUR 'ILLIT. (PHOTO: OZ RITTNER)

CONCLUSIONS

Seba's Spider conch is most likely the only species recovered during the excavation of Horvat Karkur 'Illit, which originated from the Red Sea or one of its northern bays. Although the Money cowry *Monetaria moneta* is also known from the Red Sea, more particularly from its southern part, in the northern part it is considered a rather rare species (Heiman, 2002). Most shell beads made from either the Money cowry or its close relative *Monetaria annulus* (Linnaeus, 1758) and found in excavations carried out in the Middle East were most likely imported to the Levant from East Africa or the N.E.-Indian Ocean.

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SEASHELLS CONSUMPTION ON FRENCH ATLANTIC COAST IN MIDDLE AGES AND EARLY MODERN AGE: FONTDOUCE'S AND LA GRIPPERIE-SAINT-SYMPHORIEN'S EXAMPLES.²

LAURA LE GEOFF³ AND CATHERINE DUPONT⁴

INTRODUCTION

This publication introduces the malacological studies of two French archaeological sites located on the Atlantic coast. The first one, Fontdouce's abbey, is a monastic establishment situated 50km from the sea. This settlement was founded in the 12th century. The second one, La Gripperie-Saint-Symphorien, is a rural settlement near the Brouage's marsh. It has been occupied since the 7th century. Subsequently, the results of these studies are compared to data from written historical sources. This research has enhanced our knowledge of the consumption of seashells during the Middle Ages and the early modern age.

METHODS

The classic methodology of species identification and quantification of seashells fragments has been applied on Fontdouce's abbey and La Gripperie-Saint-Symphorien. In addition, biometric measurements on whole or slightly fragmented individuals were taken. However, a large number of greatly fragmented flat oysters (*Ostrea edulis*) were noticed on which the hinge and the muscular impression were preserved nonetheless. Therefore, we tested possible relationships between the height of the valve and several intermediate measurements. A valid correlation is obtained with the distance from the hinge to the muscular impression. The coefficient is at least of 95% (**Fig. 1**). Thanks to this mathematic correlation, the height of over half of the fragmented valves has been reconstructed.

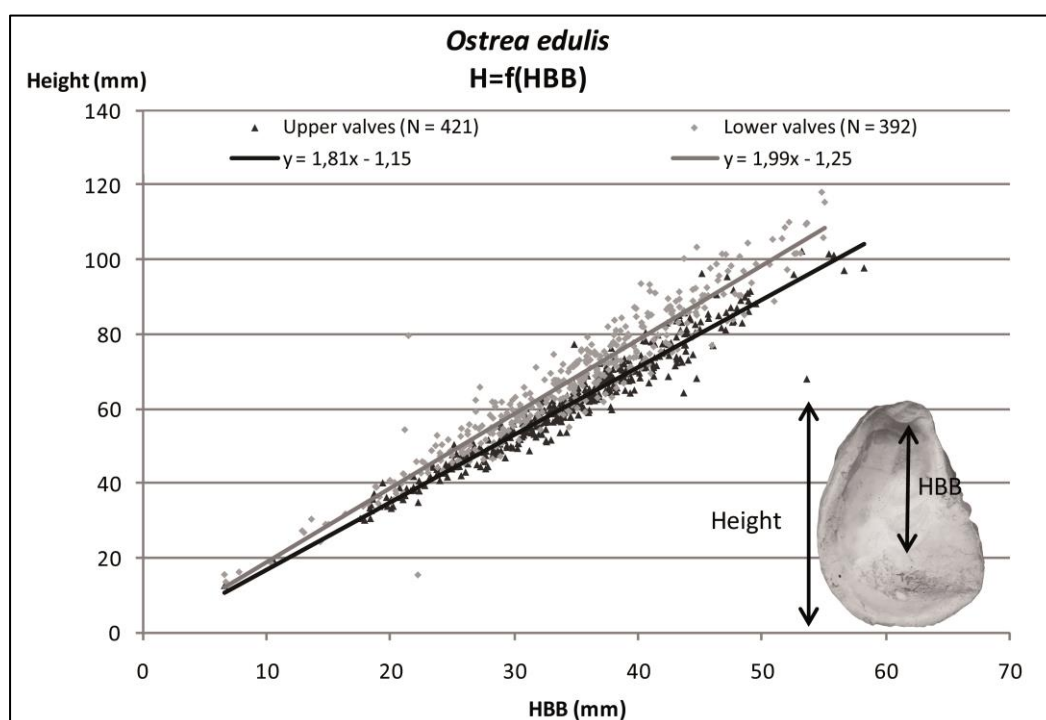


FIG. 1: CORRELATION BETWEEN AN INTERMEDIATE MEASURE (HBB) AND THE WHOLE HEIGHT OF FLAT OYSTERS

² This paper is an abstract of the publication: Le Goff L. et Dupont C., in press, « Consommation de coquillages du Moyen Âge au début de l'époque moderne sur le littoral charentais : les exemples de Fontdouce et de La Gripperie-Saint-Symphorien (Charente-Maritime) », *Aquitania*, 31.

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ARCHAEOMALACOLOGICAL RESULTS

At the scale of the malacological diversity, a relatively high specific selection has been observed on both sites: 18 taxa at Fontdouce and 21 at La Gripperie-Saint-Symphorien were identified. However, these taxa were sometimes represented by few individuals. Among the most important species, the flat oyster *Ostrea edulis* was found on both archaeological sites and at all times. The other well represented marine molluscs – the mussel *Mytilus edulis*, the clams *Ruditapes decussatus* and *Polititapes aurea*, the cockles *Cerastoderma edule* and *C. glaucum* and the peppery furrow shell *Scrobicularia plana* – were found in variable proportions according to their location inside the sites and the date of shell accumulations. We noticed a particular case at la Gripperie-Saint-Symphorien in the 7th century, where two species only – the flat oyster *Ostrea edulis* and the clam *Ruditapes decussatus* – constituted 98% of the Minimum Number of Individuals (MNI) (Fig. 2).

These mollusks come mostly from rocky shores with a pronounced tendency to mudding, as a very large amount of tunnels from *Polydora* worms were observed on the oyster valves. The seashells were probably collected by foot, as they are accessible on the seashore without diving or dredging equipment. Moreover, we didn't notice any perforations on shells that might have resulted from using this kind of equipment. They have probably been selected according to a minimal size, as we observed very few individuals measuring less than 20mm.

Last but not least, we observed opening scars on the hedge opposite the hinge on a large amount of oyster shells.

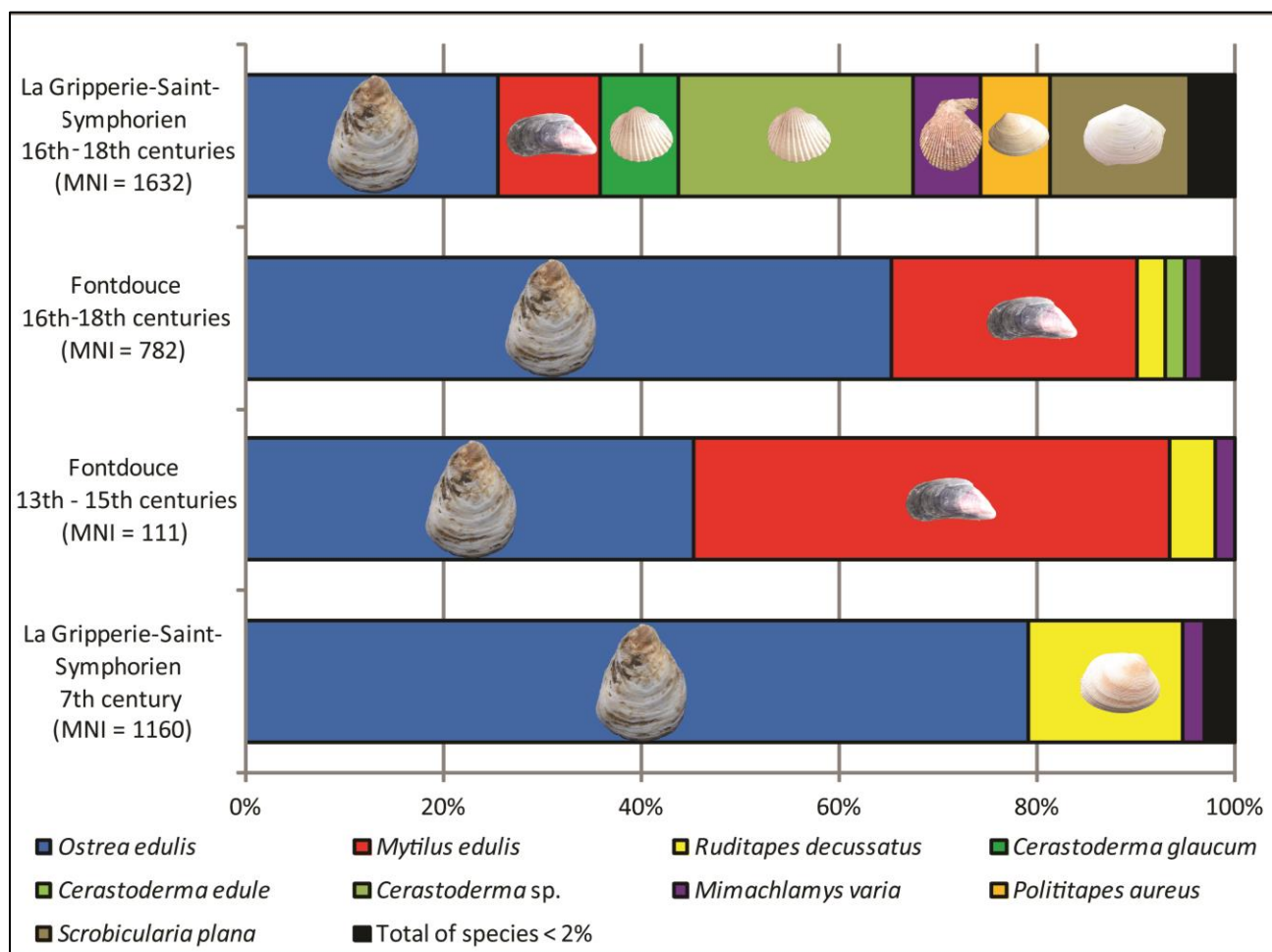


FIG. 2: MALACOLOGICAL SPECTRA AT LA GRIPPERIE-SAINT-SYMPHORIEN AND FONTDOUCE IN FUNCTION OF THE CHRONOLOGY

FROM FIELD TO ARCHIVES BOOK

One of the most important issues of this archaeomalacological study is to determine for what purpose these shells were collected. The alimentary aspect of these malacofaunal remains cannot be denied. However, questions remain about how the meat was eaten, if it was prepared in specific ways and, in case it was, if the meat was extracted from the shell before or after its preparation. As these questions cannot really be answered by studying malacofaunal remains yet, we decided to conduct research among French written historical sources and especially culinary books. Such books, like *Le Viandier de Taillevent*, had disappeared after antiquity and recurred only in late Middle Ages and early modern age. The aim was to investigate the presence of marine invertebrates in these books and to record how they are treated. In spite of a small number of recipes preparing them, the systematic practice of cooking these marine products was observed, including the oysters. The recipes are very diversified, from broths to pies and fritters. Various spices are widely used, according to medieval French way of cooking. In contrast, the number of species is very low: only recipes about oyster, mussel, cuttlefish, spiny lobster and squat lobster were found.

We then turned on the question of possible social and cultural specificities. Our investigation in other French written sources in the early modern age highlighted that seashells have a negative connotation. These marine products seem to have been consumed only by coastal populations, used as a subsistence food source. The exception remains for oysters and mussels which were transported to Paris to be sold on markets. French kings Louis XIII and Louis XIV were themselves fond of oysters. Monastic populations may have had a specific view of marine products, as they had to follow a strict diet forbidding meat, especially mammal's meat. It could be replaced by fishes, including seashells, considered as "fishes with scales" by medieval and modern authors. The other example of the monastic establishment of Sainte-Gemme can be described. It is located a few kilometers away from Fontdouce, where the abbot in 1249 recalled that mussels should not be served more than twice a week. Such a reminder probably came from an excessive consumption of these mollusks.

Finally, the transportation of such seafood is discussed. At La Gripperie-Saint-Symphorien in the 7th century a significant difference between the number of upper (right) and lower (left) valves of oysters was observed; the latter being much more numerous. We assumed that this difference could be due to the opening of the oysters directly on the gathering site and to the transportation of the meat only in the lower valve. As a comparison, we mentioned the cases of gigantic oysters deposits from Saint-Michel-L'Herm and Beauvoir-sur-Mer on the French Atlantic coast.

CONCLUSION

To conclude, it seems that data from written sources and from archaeological remains complement one another, even if it cannot be used in the same way. The written sources should be used cautiously because they date mainly from late Middle Ages and consider mostly wealthier populations of aristocracy and bourgeoisie.

A SECOND LOOK AT THE SHELL BEADS FROM THE EXCAVATIONS AT TEL MICHAL SOUTH OF HERZLIYA, ISRAEL

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ACKNOWLEDGEMENTS

I would like to thank my colleague Oz Rittner (Tel Aviv University) for the photographs on the plate.

INTRODUCTION

The archaeological site of Tel Michal consists in fact of a complex of separate sites spread over several kurkar¹ outcrops within the boundaries of the coastal town Herzliya, Israel. This complex was excavated by a team of the Institute of Archaeology at the Tel Aviv University and several institutes from abroad, under the direction of Prof. Ze'ev Herzog (TAU), during four seasons 1977-1980. The results of these excavations were published in a monograph edited by Herzog, Rapp Jr. & Negbi (1989).

Molluscs recovered during these excavations were only treated in part by Gifford & Rapp Jr. (1989), Hellwing & Feig (1989) and Kertesz (1989). The shells briefly mentioned by Hellwing & Feig (1989) were identified by the late Prof. E. Tchernov (Hebrew University of Jerusalem), one of his students: Simon Davis, and two unknown persons. This material will be dealt with in a forthcoming article (Mienis, in preparation).

The identification of the additional material mentioned in Gifford & Rapp Jr. (1989) and especially in Kertesz (1989) was not carried out by Tchernov & associates and suffers considerably from misidentifications.

In the past I have reported (Mienis, 2007) on the strange identification of bivalves as *Mya* species in sediments from Nahal Ayalon at Gerisa, which research had been carried out during the paleogeographical investigations for the Tel Michal excavations (Gifford & Rapp Jr., 1989).

In this short note I like to correct the identifications of the shells among the beads from Tel Michal which were published by Kertesz (1989).



From the Iron Age Stratum XIII Kertesz (1989: 370, plt. 79: 2, here copied in **Fig. 1**) mentioned six shell beads made of cowries found in a jug. The same beads (seven and not six) had been dealt with and figured by Herzog, Negbi & Moshkovitz (1978: 111, plt. 36:3) and identified as *Cypraea moneta* (which name reads today *Monetaria moneta*).

FIG. 1: [LEFT] COPY OF KERTESZ (1989: PLT. 79: 2): THE HOARD OF BEADS FOUND IN AN IRON AGE JUG.

In all specimens the dorsum had been removed. In that way the shells could be strung. The identity of the cowries had been changed by Kertesz (1989: 370) into *Cypraea carneola*, which in modern nomenclature should now be *Lyncina carneola*. The latter is characterized by very small and numerous teeth on the lip and columella of the aperture (**Plate 1 [1]**). The shells in the picture (Kertesz, 1989: plt. 79:2, and here **Fig. 2**) have a different depressed,

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oval form with less numerous teeth in the aperture. They belonged indeed to a single species of *Monetaria* but not to *moneta* but to the allied much smoother shelled *Monetaria annulus* (**Plate 1 [2]**). It is a rare species in the Red Sea but a very common one in the Indian Ocean.



From the Persian Period several cowry beads were found in burials and figured on the plates in Kertesz (1989): burial 1163: plate 79: 5: a single shell, burial 1184: plate 79: 7: two shells and burial 1875: plate 80: 1: four shells. All shells were identified again as belonging to *Cypraea carneola* but in reality they belonged also to *Monetaria annulus*.

The measurements given of all the Cowry shells mentioned in the text and shown on the plates are far too small for *Lyncina carneola*. The smallest shell of an adult specimen in the collection of the Steinhardt Museum of Natural History and shown in **Plate 1 [1]** has a length of 24.2 mm! The size of the shells and the number of teeth in the aperture and the wide gap between the teeth on the lip and the columella fit those in *Monetaria annulus*. In addition burial 666 (Kertesz, 1989: plt. 79: 6, here copied in **Fig. 2**) contained two shell beads identified as belonging to *Cerithium* [sic!] *erithraeonense* [sic!].

FIG. 2: [ABOVE] COPY OF KERTESZ (1989: PLT. 79: 6): BEADS FOUND IN BURIAL 666 FROM THE PERSIAN PERIOD.

According to Kertesz (1989: 372) the two shells had a length of only 14 and 16 mm. However in reality *Cerithium adansonii*, the correct name for *Cerithium erythraeonense*, is a much larger marine gastropod from the Red Sea (**Plate 1 [3]**), of which a normal adult specimen shown in Fig. 3, has a length of 65.9 mm. As a matter of fact the specimens figured on the plate showed that we are dealing here with shells of a freshwater species: *Melanopsis costata*, from the Jordan River and Sea of Galilee (**Plate 1 [4]**). In addition Kertesz (1989: 374, plt. 80:1) mentioned two amulets of Mother-of-Pearl in the form of a Horus eye, but these are unrecognizable from the plate.

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PLATE 1: SHELL SPECIMENS –

(1) *LYNCINA CARNEOLA*, A TINY ADULT SHELL WITH A LENGTH OF 24.2 MM;

(2) *MONETARIA ANNULUS*, A LARGE SHELL WITH A LENGTH OF 23.58 MM;

(3) *CERITHIUM ADANSONII*, A NORMAL ADULT SHELL WITH A LENGTH OF 65.87 MM;

(4) *MELANOPSIS COSTATA*, A LARGE ADULT SHELL WITH A LENGTH OF 20.15 MM

A NOTE ON THE MARINE SHELL OBJECTS FROM THE BURIAL SITES OF MALARI, LIPPA AND ROPA IN THE TRANS-HIMALAYAN REGION OF INDIA

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INTRODUCTION

Recently marine shell objects besides other funerary objects were recovered from the burial sites of Lippa and Ropa in dist.Kinnaur, Himachal Pradesh and from Malari in dist. Garhwal, Uttarakhand (**Fig 1**). In addition at village Gyu, at an altitude of 14000Ft in Lahul-Spiti district, shell beads, cowrie shells, a star shaped shell bead, steatite beads, pottery along with human skeletal remains were found by the villagers during the construction of a house.

The Trans-Himalayan region in which these sites are located extending from the northwest in Ladakh to Kinnaur, Uttarakhand has witnessed very limited archaeological investigations as compared to Nepal and Western Tibet (Tiwari, 1984-85, Aldenderfer and Zhang 2004, Alt .et.al 2003). However in this region the widespread distribution of burial sites showing regional distinctiveness of ancient burial practices has been recorded. This makes it one of the largest geographical regions with ancient burials in one of the world's highest mountain ranges. The recent exploration and excavation at the site of Kanam and Lippa in Kinnaur, Himachal Pradesh has provided for the first time archaeological evidence for the burial culture and pyrotechnology dated between 600BCE-300BCE (Nautiyal et. al. 2014).

The archaeological repertoire of the distinctive pottery from the burial sites show remarkable parallels in its types and style. This suggest very close connections amongst the people who practiced the diverse burial practices in the past in this mountainous region through trade networks and cultural contacts.

The findings of shell objects from these burial sites is important as it is probably the first time that these have been reported in an archaeological context from the Trans-Himalyan region of Kinnaur and Uttarakhand. Therefore here below are discussed the shell objects found at these above mentioned sites.

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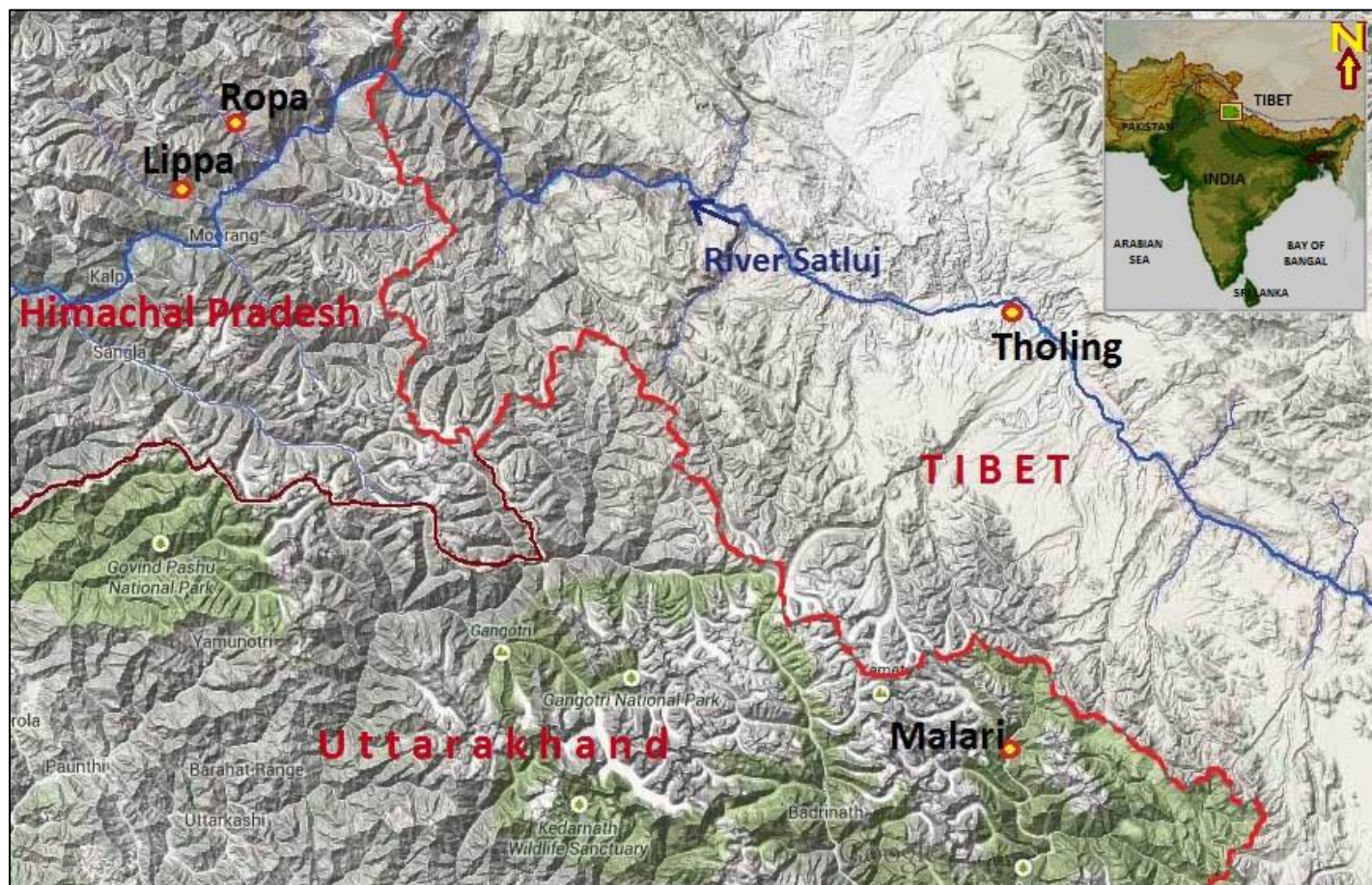


FIG. 1: MAP SHOWING THE THREE BURIAL SITES OF MALARI IN UTTARAKHAND, LIPPA AND ROPA IN KINNAUR IN THE TRANS-HIMALAYAN REGION OF, INDIA.

RESULTS

MALARI (30-41'10.07"N 79-53'24.5"E) is a small village situated at an altitude of 3500 mtr. in the Nitti valley in Chamoli district of Uttarakhand, 63 kms from Joshimath near the Indo- Tibetan border. Archaeological investigations following Dabral's (1968) discovery of human skeletons, have yielded many cave burial sites at Malari giving a new impetus to archaeological studies in this region (Bhatt et. al 2008-9, Nautiyal and Bhatt 2009, Bhat et.al 2014). From Malari along with human remains, spouted red and black pottery, gold mask, gold pendent, iron tools, beads and a complete animal skeleton of

Zoba (a cross breed of yak and Cattle) were recovered inside a cave which was cut into a steep rock in oval shape upto the depth of 2.05 m. and a width of 1.10 m. (Bhatt and Nautiyal 1987-8). Also recovered were a perforated shell disc and a bangle fragment. The former is a flat convex disc like object having a diameter of 3.83 cm and thickness of 0.65 cm. with a central perforation. It is made from the main shell whorl of *Turbinella pyrum*, is crudely made and displays weathering (**Fig.2**). The other is a shell bangle fragment having two lines engraved parallel to each other in the centre on its one surface while the other is plain. There are 4 holes two on either side and a hole in the centre. This is also made using *T. pyrum* shell and exhibits fine craftsmanship (**Fig.3**).



FIG. 2: PERFORATED SHELL DISC FROM MALARI



FIG. 3: ENGRAVED SHELL BANGLE FRAGMENT FROM MALAR

LIPPA (N 31°39'56" E 78°72'98") is situated on the confluence of Kerang khadd and Taiti stream at an altitude of 2,745 m in Pooh Mandal in Morang division of Kinnaur district, about 42 km from district headquarter of Recong Peo. The village is snow bound for about three months in a year and is prone to heavy and recurrent landslides. The archaeology of Lippa is largely unknown except for the Buddhist monastery at Lippa which has been well documented by the Archaeological Survey of India in 1998-99. In the recent excavations of cist burials at Lippa various types of grave goods comprising objects of iron, gold and copper, tuyere, pottery and beads of steatite, turquoise, clay, agate, carnelian and marine shell, charcoal along with the animal and human remains have been found (Nautiyal et.al 2014). The site has yielded interesting finds of two small and highly vitrified clay crucibles, which suggest that the Lippa inhabitants had developed pyrotechnology (high temperature application) for metallurgical and non – metallurgical activity (Nautiyal et.al 2014). This evidence suggests that Lippa was probably an important multi craft centre in the Trans-Himalayan region which had also engaged in long distance trade involving shell objects.

From Lippa two circular perforated shell disc were found. One is a small flat circular disc, quite weathered having a diameter of 19.83mm with a central perforation. It was found on the surface 3 meters below from the burial site. It has a perforation in the centre which is quite big and has been done by drilling (**Fig. 4**). The object has been made using the main shell whorl of *Turbinella pyrum*. These are mostly large shells but here fragment from the spire portion of a small sized shell has been used.

The other is also a circular disc having a diameter of 22.18 mm, a width of 3.5 mm. with a perforation which is slightly off centre. It was also made using a fragment from the main shell whorl of *Turbinella pyrum* shell. The perforation is big and was made by drilling. The specimen is weathered and has pit marks on its surface (**Fig.5**).



FIG. 4: PERFORATED SHELL DISC FROM LIPPA



FIG. 5: PERFORATED SHELL DISC FROM LIPPA

ROPA (lat. 31°47'52.83"N and long. 78°25'15.20"E) is the last village in the Rupa valley on the bank of the rivulet *Rupagad* at an altitude of 3090 m. MSL in the Pooh sub division of Kinnaur District. The *Rupagad* meets the Sutlej river near Shiasu village. Recently a hoard of 18 pots from a cist at the depth of 0.75 m. were discovered by the local farmers on the steep slope of the hill above the village while raising the terraces for an apple orchard. The repertoire of pots include large vessels with long neck without handles of grey ware made on wheel and highly fired, large and small vases and small cups, wide mouthed deep vessels with flat base and handles on both sides on the body. It is inside one of the large vessels, two perforated shell discs and a total of 13 shell beads were found which are described below .

The two perforated shell discs are small, flat with a central perforation done by drilling. Both these were made from the main whorl of *T. pyrum* shell and are coated with a reddish patina which needs to be investigated (**Fig. 6**)

Besides these, 13 shell beads oval to egg shaped with one surface flat and the other bulging in more or less similar size and shape were found (**Fig. 7**). These beads have an average length of 16.82 mm. and breadth of 10.35 mm. All the beads bear a perforation done by drilling where the bulging surface slopes towards the narrow end. On the flat side runs a straight deep groove parallel to the length of the bead from the perforation to its margin dividing the bead into two equal halves.



FIG. 6: PERFORATED SHELL DISC FROM ROPA



FIG. 7: SHELL BEAD FROM ROPA



FIG. 8: PERFORATED SHELL DISC FROM GYU

All the beads are made using the shell of the large marine gastropod *Turbinella pyrum*. This has been identified from the fine striations which are seen on the surface which are typically observed in this shell. Probably all these were meant for stringing together. Their exact purpose is difficult to ascertain due to their recovery from a pot. Although the beads show fairly good preservation they have a weathered and a chalky appearance due to exposure to cold weather conditions.

From Gyu a village in the Lahul-Spiti district of Himachal Pradesh shell beads, cowries, star shaped shell bead, steatite beads, pottery along with human skeletal remains were found by the villagers during the construction of a house. Here a shell disc having parallel lines engraved along its borders with two perforations in the centre and one near the margin was recovered (**Fig. 8**). This was also made using *T.pyrum* shell.

DISCUSSION

The recovery of marine shell objects from the burial sites of Malari, Lippa, Ropa and Gyu are very important discoveries having significant implications for studying ancient human societies inhabiting the Trans-Himalayan region. All the objects examined were made using the marine gastropod shell of *Turbinella pyrum* commonly referred to as the sacred Indian chank shell. In India antiquity of its utilisation can be traced from the third millenium BC. until the late historic times (Deshpande-Mukherjee 1998). The *T. pyrum* with its large sturdy white shell is restricted in its habitats to the intertidal coral reef areas in the Gulf of Kachhh and deeper waters in the Gulf of Mannar and Palk bay on the southeastern coast of India. Hence objects made using it at sites in high altitude regions of the Himalayas far from the coast make them all the more significant. These therefore have ample potential for reconstructing complex trade networks through which these had been sourced, circulated and used in this region.

A comparison of these objects with those found at other archaeological sites revealed a few parallels. Similar objects particularly the perforated shell discs have been reported from the Iron Age sites of Sanur (Banerjee and Soundara Rajan 1959), Perumbair (Rea 1915) in South India and from Agroha an Early Historic site in North India (personal observation) Whereas the oval egg shape shell beads from Ropa are quite unique and have not been observed from other Indian archaeological sites so far. Some slight resemblance is seen with the flat drop shaped shell beads from Taxila by Beck (1946). The Ropa

beads in some ways also resemble the shape of the cowrie shells. Is it that these were made to look like cowrie shells which were in demand and might not have been easily available?

Ethnographic parallels for the use of similar perforated shell discs but of varying sizes is observed within the Naga communities residing in the North eastern Himalayas such as the Ao, Angami, Konyaks, etc. (Hutton 1921, Jacobs 1990). Earlier attempts have been made to establish connections between the present-day Naga communities of Nagaland and the ancient chank shell using megalithic people of South India (Hutton 1926). In Tibet too the custom of using shell beads with coral and turquoise still persists.

Presence of perforated shell discs at all the three sites suggests their common use but for specific reasons. These were probably used in association with other stone beads or were sewn on clothes. In the absence of any shell debitage recovered from these sites it is difficult to say if these objects were locally produced or procured from the plains. It is quite likely these could have been procured from some of the Early Historic sites in northern India where they were being produced as observed at Agroha. However their simple and crude nature does suggest some amount of localised manufacture. Even today small scale shell working is still carried out in some of the Naga villages (Jacob 1990). Further the association of these shell objects with human burials is interesting as it in a way reflects their socio-religious significance as well as their importance as items of exchange, value, and status.

At this juncture it is difficult to trace the entire network or the provenance of these marine objects. However, the evidence does suggest that it was one of the earliest trade networks involving the trade of marine shell objects into the Trans-Himalayan region of India.

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NOTES ON SHELLS FROM EXCAVATIONS AT TEL GEZER, ISRAEL

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Some 40 years ago I received from the late Prof. Eitan Tchernov a small collection of archaeomalacological material, which had been assembled during the Hebrew Union College Excavations at Tel Gezer (1964-1972). The collection consisted only of a selection of characteristic pre-sorted types of shells and was intended to be used for further identification of all the excavated shell material. For some unknown reasons these shells were never returned either to Joe D. Seger or Sy Gitin, at that time associated with the Hebrew Union College Biblical and Archaeological School in Jerusalem. The studied material from the typological collection consisted only of 25 samples. The shells are enumerated below and briefly discussed.

THE STUDIED MATERIAL

The shells were initially identified on the spot or in some cases with the help of the recent mollusc collections of the Hebrew University of Jerusalem (today the National Natural History Collections of the Hebrew University of Jerusalem), but the scientific names given to the samples of marine species in 1972/3 were updated according to WoRMS: the World Register of Marine Species (www.marinespecies.org) (Tables 1 and 2).

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TABLE 2: MOLLUSCA - GASTROPODA

Family	Species (Identification)	Typological Collection	Description
Melanopsiidae	<i>Melanopsis buccinoidea</i> (Olivier, 1801)	Marine snail Type A.	MCS 684: B VII 38.120, Locus 38035: 7-4-72: a shell with a damaged top.
Cypraeidae	<i>Monetaria annulus</i> (Linnaeus, 1758)	<i>Cardium tuberculatum</i> (sic!).	MCS 1368: B IV 2.61: Locus 2003.1: 7.26: a burnt, broken fragment of the columellar area.
Cypraeidae	<i>Monetaria annulus</i> (Linnaeus, 1758)	<i>Cypraea</i> sp.	MCS 1464: B VII 38240: Locus 38065: 7-26-72: a small, but adult shell of which the dorsum had been removed
Naticidae	<i>Neverita josephinia</i> (Risso, 1826)	Marine snail Type D.	MCS 491: B VII 44.140, Locus 44071: 7-2-73: a heavily damaged shell missing a large part of the body whorl.
Muricidae	<i>Bolinus brandaris</i> (Linnaeus, 1758)	<i>Murex</i> Sp.	MCS 592: B IX 2.144: Locus 2013: 7-5-73: a shell.
Muricidae	<i>Hexaplex trunculus</i> (Linnaeus, 1758)	<i>Muricanthus</i> sp.	MCS 214: B VII 37.64: Locus 37012: 6-23: a worn shell.
Nassariidae	<i>Nassarius circumcinctus</i> (Adams, 1851)	<i>Cassis</i> sp.	MCS 1368: B VII 63.19: Locus 63004: 7-25-72: a shell with a man-made hole behind the lip of the aperture.
Family	<i>Conus mediterraneus</i> Hwass, 1792	Marine snail Type C.	MCS 211: B VII 38.99: Locus 38033: 6-29-72: a worn shell with a man-made hole in the top.
Conidae	<i>Conus parvatus sharmiensis</i> Wils, 1986	Marine snail Type B.	MCS 211: B VII 44.106: Locus 44022: 6-21-73: a worn shell with a man-made hole in the top.
Enidae	<i>Euchondrus septemdentatus</i> (Roth, 1839)	Land snail Type H.	MCS 170: B VII 36.1, Locus 36001: 6-20-72: a shell.
Ferussaciidae	<i>Calaxis hierosolymarum</i> (Roth, 1855)	Land snail Type I.	MCS 1518: B IV 11.59: Locus 11006.1: 7-26-72: 24 partly broken shells.
Hygromiidae	<i>Xeropicta vestalis joppensis</i> (Schmidt, 1855)	Land snail Type C.	MCS 442: B VII 36.14: Locus 36003: 6-27: a small shell.
Hygromiidae	<i>Xeropicta vestalis joppensis</i> (Schmidt, 1855)	Land snail Type E.	MCS 1368: B VII 63.19, Locus 63004: 7-25-72: a juvenile shell.
Helicidae	<i>Helix engaddensis</i> Bourguignat, 1852	Land snail Type B.	MCS 491: B VII 44.140: Locus 44071: 7-2-73: one shell.
Helicidae	<i>Helix engaddensis</i> Bourguignat, 1852	Land snail Type J.	A recent juvenile shell with the aperture closed by an epiphragm.
Helicidae	<i>Levantina spiriplana</i> sensu lato	Land snail Type D.	MCS 100: B VII 36.3: Locus 36003: 6-21-72: a shell consisting of the early whorls only.
Helicidae	<i>Levantina spiriplana weneri</i> (Kobelt, 1889)	Land snail Type F.	MCS 384: B VIII 24.15: Locus 24008: 6-27-72: a shell with the lip of the aperture missing.
Helicidae	<i>Levantina spiriplana weneri</i> (Kobelt, 1889)	Land snail Type G.	A complete shell.
Helicidae	<i>Levantina spiriplana</i> hybrid (<i>caesareana</i> x <i>hierosolyma</i>)	Land snail type A.	MCS 377: B VII 38.85: Locus 38031: 6-27-72: a complete shell with an almost closed umbilicus as in hybrids between <i>Levantina spiriplana caesareana</i> (Mousson, 1854) and <i>Levantina spiriplana hierosolyma</i> (Mousson, 1854)

TABLE 1: MOLLUSCA - BIVALVIA

Family	Species (Identification)	Typological Collection	Description
Glycymerididae	<i>Glycymeris nummaria</i> (Linnaeus, 1758) Synonyms: <i>G. cor</i> (Lamarck, 1805), <i>G. insubrica</i> (Brocchi, 1814), <i>G. violascens</i> (Lamarck, 1819) and <i>G. violascens</i> (sic!) of authors.	<i>Glycymeris violascens</i> (sic!).	MCS 490: B VII 44.139: Locus 44022: 7-2-73: two valves, both with a man-made hole in the umbo.
Spondylidae	<i>Spondylus gaederopus</i> Linnaeus, 1758	<i>Spondylus</i> sp.	MCS 1254: B VII 34.78: Locus 34042: 7-25: a large lower valve which is heavily damaged towards the ventral margin.
Mutelidae	<i>Chambardia rubens arcuata</i> (Cailliaud, 1823)	Freshwater clam.	I. 10A 210: Locus 10074, D7 697: a large partly disintegrated fragment; I. 10A 250: Locus 10074, P M29 827: a large completely disintegrated fragment.
Cardiidae	<i>Acanthocardia tuberculata</i> (Linnaeus, 1758)	Type A clam.	MCS 745: B VII 44.14: Locus 44001: 7-7.72: a valve with a man-made hole in the umbo.

SOME REMARKS

According to the origin of the shells they can be divided into four different groups:

1. Local land and freshwater snails: the terrestrial species *Euchondrus septemdentatus*, *Calaxis hierosolymarum*, *Xeropicta vestalis joppensis*, *Helix engaddensis*, *Levantina spiriplana weneri* and *Levantina spiriplana* hybrid (*caesareana* x *hierosolyma*), and the aquatic species *Melanopsis buccinoidea*.
2. Marine species from the Mediterranean Sea: the snails *Neverita josephina*, *Bolinus brandaris*, *Hexaplex trunculus*, *Nassarius circumcinctus*, *Conus mediterraneus*, and the bivalves *Glycymeris nummaria*, *Spondylus gaederopus* and *Acanthocardia tuberculata*.
3. Marine species from the Red Sea: *Monetaria annulus* and *Conus parvatus sharmiensis*.
4. Freshwater mussels from the Nile River, Egypt: *Chambardia rubens arcuata*.

The land snails *Euchondrus septemdentatus*, *Calaxis hierosolymarum*, *Xeropicta vestalis joppensis* and *Helix engaddensis* are still commonly encountered on Tel Gezer and the specimens found during the excavation might be in part of recent origin since they are either living subterranean (*Calaxis hierosolymarum*) or they aestivate deeply buried in the soil (*Helix engaddensis*).

The presence of *Levantina spiriplana weneri* and hybrid *Levantina spiriplana* (*caesareana* x *hierosolyma*) is however another story. Today *Levantina spiriplana hierosolyma* is living in the surroundings of Tel Gezer, while the most southern localities of *Levantina spiriplana weneri* and the hybrid *Levantina spiriplana* are situated near the Ben Shemen and Nahal Daniyel area at least some 9 km to the north.

This means that either the distribution pattern of the *Levantina spiriplana* subspecies with a closed umbilicus (*caesareana* and *weneri*) and with an open umbilicus (*hierosolyma*) has shifted to the north,

or specimens of *Levantina spiriplana wernerii* and the hybrid *Levantina spiriplana* were intentionally brought to Tel Gezer for culinary purposes.

The presence of *Melanopsis buccinoidea* at Tel Gezer is also interesting. This typical species of running water is not living anymore in the Gezer region. According to the list of the typological shell collection at least one specimen of *Melanopsis* was found in a mud brick. This raises the question whether mud bricks were made locally or brought from elsewhere. They were found in a debris layer later than the Hellenistic period.

Part of the shells from the Mediterranean Sea show signs that they had been used either as shell beads: *Nassarius circumcinctus* with a man-made hole in the last whorl behind the lip of the aperture and *Conus mediterraneus* with a man-made hole in the apex, or shell pendants: *Glycymeris nummaria* and *Acanthocardia tuberculata* all with a man-made hole in the umbo. All other Mediterranean shells do not show any trace of manipulation.

Both species from the Red Sea: *Monetaria annulus* and *Conus parvatus sharmiensis*, show traces that they had been exploited too as shell beads. In the Cowry shell (*Monetaria annulus*) the dorsum had been removed, while the tiny Cone shell (*Conus parvatus sharmiensis*) showed a man-made hole in the apex.

The freshwater mussels from the river Nile *Chambardia rubens arcuata* are well-known for their beautiful rose coloured interior of mother-of-pearl, however the material from Tel Gezer did not show a trace of manipulation, besides that the study specimens were almost completely disintegrated.

CONCLUSION

Tel Gezer was a very important major city in ancient times in the northern Shephelah of Israel. Therefore it is a pity that we could study only a small part of the typological shell collection representing the various excavations. Nevertheless these tiny titbits of archaeomalacological material show that they can supply us with intriguing information which deserves a more intensive look at all the shell material.

SOME SHELLS FROM THE EXCAVATION OF HORBAT RIMMON, ISRAEL

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I would like to thank Prof. Amos Kloner (Bar Ilan University) and Dr. Liora Kolska Horwitz (Hebrew University of Jerusalem) for giving me the opportunity to study this archaeomalacological material.

INTRODUCTION

The ruins of Horbat Rimmon are situated some 10 km NNE of Be'er Sheva in the Judean Shefelah, Israel (New Israel grid 187/586). The site was excavated by Prof. Amos Kloner between 1978 and 1981 (Kloner, 1980, 1981 & 1992). These excavations revealed the presence of remains from the Hellenistic, Roman and Byzantine periods.

The archaeozoological finds at Horbat Rimmon were studied by Liora Kolska Horwitz (1998). Only four samples of shells were present among the 1443 animal bones and bone fragments. They were forwarded to me for further study. They could be identified on the spot.

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RESULTS

The shell material recovered at Horbat Rimmon turned out to belong to three different species.

Gastropoda

Family Helicidae

Helix engaddensis Bourguignat, 1852

Locus 135; Basket 496/2: one complete shell.

Bivalvia

Family Glycymerididae

Glycymeris nummaria (Linnaeus, 1758)

Locus 120; Basket 451: one damaged valve with a large hole in the umbo.

Locus 148; Basket 571: one fragment of the ventral margin.

Remarks: This species is better known as *Glycymeris insubrica* (Brocchi, 1814), however according to WoRMS (World Register of Marine Species) that name is a junior synonym of *Glycymeris nummaria*.

Family Mutelidae

Chambardia rubens arcuata (Cailliaud, 1823)

Locus 146; Basket 611: one fragment of the umbo.

REMARKS AND CONCLUSION

Origins and age of the material

Only the Levant Field snail *Helix engaddensis* is of local origin. It was found in the fill of a large cave. Although this fill contained Hellenistic, Roman and Byzantine elements the land snail might be of much more recent origin because it is a species which aestivates buried deep into the ground. However not always they awake from such summer sleeps!

The two mussel species *Glycymeris nummaria* and *Chambardia rubens arcuata* were brought intentionally to the site from elsewhere. *Glycymeris nummaria* is a marine species from the Mediterranean Sea, while *Chambardia rubens arcuata* is a Nilotic species i.e. it is a freshwater mussel confined in its distribution to the river Nile in Egypt. These mussels were found in a Byzantine context.

Exploitation of the material

Only the damaged *Glycymeris* valve from locus 120 shows signs that it had been manipulated into a shell pendant by making a hole in the umbo of the valve.

The umbonal fragment of *Chambardia* lacks any traces of manipulation. However the large valves of these freshwater mussels have attracted the attention of man since at least the Natufian period because of their beautiful pearly interior (Reese et al., 1986). The excavation of the nearby Byzantine church of Karkur, 5 km N of Be'er Sheva, revealed the presence of similar fragments (Mienis, 2004: as *Aspatharia rubens*).

It is a pity that during the excavation of Horbat Rimmon no other shells have been preserved for further study.

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RECENT PUBLICATIONS

DUPONT C., 2014 – « Do not mix up apples and oranges! A concept applied to shells from the Mesolithic. » In J.J. Cantillo, D. Bernal, J. Ramos (eds.), *Moluscos y púrpura en contextos arqueológicos atlántico-mediterráneos: nuevos datos y reflexiones en clave de proceso histórico: actas de la III reunión científica de arqueomalacología de la Península Ibérica, celebrada en Cádiz los días 3 y 4 de diciembre de 2012*, Cádiz: Universidad de Cádiz, Servicio de Publicaciones, ISBN: 978-84-9828-475-1, 41-50.

Sea-shells are both composed of an animal or the flesh, and of a skeleton, the shell. This diversity is crucial for maritime human communities because, for them, mollusks represent sometimes food or raw material. French examples from Prehistory to nowadays demonstrate that the recycling of a shelly skeleton from an animal that had been eaten is not a systematic behavior.

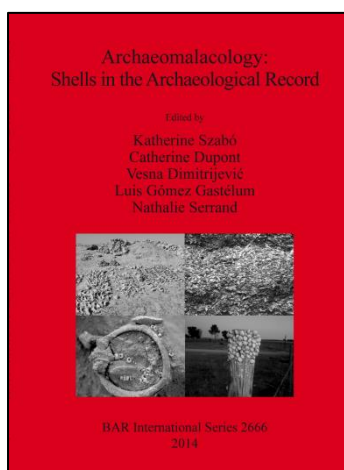
Since the Mesolithic the collecting of shells can correspond to different activities depending on whether Man is looking for food or raw material. This distinction can have a signification in the symbolic point of view. So, shells that are never seen alive by Man can compose personal ornaments. But this dichotomous behavior is not only restricted to our Prehistory. It is what we want to illustrate with French examples through the diversity of uses of marine shells highlight thanks to the development of archaeomalacological studies.

MIENIS, H.K., 2014. Shells from Areas J and N, pp. 333-336; Shells from Area Z, pp. 373-375. In: Geva, H., *Jewish Quarter excavations in the Old City of Jerusalem conducted by Nahman Avigad, 1969-1982. Volume VI: Areas J, N, Z and other studies*. Jerusalem, Israel Exploration Society and Institute of Archaeology, Hebrew University of Jerusalem.

These two short chapters record the relatively sparse archaeomalacological material recovered during the excavation of this extensive site. Areas J and N between them yielded just 13 shells, dating mostly to the second half of the 1st century BC. These comprised the Mediterranean gastropods *Hexaplex trunculus* (1) and *Bolinus brandaris* (2), the Mediterranean bivalves *Ostreola stentina* (1) and *Spondylus gaederopus* (1), the Red Sea bivalve *Pinctada margaritifera* (1), the African freshwater mussel *Chambardia rubens arcuata* (4) and the local land snail *Levantina spiriplana hierosolyma* (3). Some of the marine shells appeared beachworn and none had been modified; all appear to be stray finds. The Red Sea pearl oyster and the Nile pearl mussel may conceivably have been imported for ornamental purposes and imply trade connections with these areas. In contrast, Area Z produced only a cache of 20 shells of the land snail *Levantina spiriplana wernerii*, dated to the 2nd-1st century BC. This subspecies is distinct from ssp. *hierosolyma*, being more globose and lacking an umbilicus. The shells are interpreted as food debris but, interestingly, this subspecies does not occur naturally at Jerusalem and the snails

had been imported, probably from an area some 30 km to the north-west. That begs the question why the local edible ssp. *hierosolyma*, although present in Area J, was passed over in favour of an exotic import. (JRS)

SZABÓ K., DUPONT C., DIMITRIJEVIC V., GASTÉLUM GÓMEZ L. G., SERRAND N., (eds.), - 2014 in press - Archaeomalacology: Shells in the Archaeological Record. Proceedings of the 11th ICAZ International Conference. Paris - Archaeomalacology Working group, 23-28 August 2010, France, BAR International Series 2666. Archeopress, Oxford, ISBN 978 1 4073 1308 5.



This publication is the volume of the ICAZ Archaeomalacology Working group of the proceedings of the 11th International Conference of the International Council for Archaeozoology (ICAZ), which was held in Paris (France) 23rd-28th August 2010. Twenty-three papers are published with evidences of human collection and modification of shells from all over the world and at a large scale of chronology (from Prehistory to Antiquity). The papers are organized in three sub-sessions. The section “Acquisition and use of shell raw materials in prehistory” focuses on patterns of acquisition and use of shell raw materials as well as on the production sequences of shell items in time and space. Specific themes of interest include the exploitation of shells as raw materials in relation to their dietary functions, or choices made to use particular shells along with or as opposed to other raw materials.

The section “Shell middens and shells as a food resource” provides a venue to explore the relationships between human groups and molluscan resources and especially encourages the combination of information derived from multiple disciplines, as well as studies that seek to contextualise shell-gathering in a wider socio-economic context. The section “Shells as indicators of palaeoenvironment, site formation and transformation” aims to investigate the potential of archaeological shell to answer questions not directly related to subsistence or material culture and especially welcomes contributions which mobilise the study of archaeological shell in relation to modern resource management and environmental change.

ROSENDAHL, D., ULM, S., SLOSS, C., STEINBERGER, L., PETCHEY, F., JACOBSEN, G., STOCK, E., AND ROBINS, R. (2015) Mid-Holocene Aboriginal occupation of offshore islands in northern Australia? A reassessment of Wurdukanhan, Mornington Island, southern Gulf of Carpentaria, Australia. *Quaternary International*. <http://www.sciencedirect.com/science/article/pii/S1040618215002025#>

Claims for mid-Holocene Aboriginal occupation at the shell matrix site of Wurdukanhan, Mornington Island, Gulf of Carpentaria, Australia, are reassessed through an analysis of the excavated assemblage coupled with new surveys and an extensive dating program. Memmott et al. (2006, pp. 38, 39) reported basal ages of c.5000–5500 years from Wurdukanhan as ‘the oldest date yet obtained for any archaeological site on the coast of the southern Gulf of Carpentaria’ and used these dates to argue for ‘a relatively lengthy occupation since at least the mid-Holocene’. If substantiated, with the exception of western Torres Strait, these claims make Mornington Island the only offshore island used across northern Australia in the mid-Holocene where it is conventionally thought that Aboriginal people only (re)colonised islands after sea-level maximum was achieved after the mid-Holocene. Our analysis of Wurdukanhan demonstrates high shellfish taxa diversity, high rates of natural shell predation and high densities of foraminifera throughout the deposit demonstrating a natural origin for the assemblage.

Results are considered in the context of other dated shell matrix sites in the area and a geomorphological model for landscape development of the Sandalwood River catchment.

HARRIS, M., WEISLER, M., AND FAULKNER, P., (2015) A refined protocol for calculating MNI in archaeological molluscan shell assemblages: a Marshall Islands case study. *Journal of Archaeological Science* vol. 56: 168 – 179

Comprehensive and transparent protocols for calculating Minimum Number of Individuals (MNI) for archaeological faunal assemblages are critical to data quality, comparability, and replicability. MNI values for archaeological molluscan assemblages are routinely calculated by counting a select range of Non-Repetitive Elements (NREs). Most commonly, only the frequency of the spire of gastropods and the umbo or hinge of bivalves are recorded. Calculating MNI based only on the frequency of these NREs can underestimate the relative abundance of particular molluscan shell forms. Using archaeological mollusc assemblages from two sites in the Marshall Islands as a case study, we outline a new protocol (tMNI) that incorporates a wider range of NRE and calculates MNI based on the most frequently occurring NRE for each taxon. The principles that underlie the tMNI method can be modified to be regionally or assemblage specific, rather than being a universally applicable range of NRE for the calculation of MNI. For the Marshall Islands assemblages, the inclusion of additional NRE in quantification measures led to (1) a 167% increase in relative abundance of gastropods and 3% increase in bivalves (2) changes to rank order abundance, and (3) alterations to measures of taxonomic richness and evenness. Given these results for the Marshall Islands assemblages, tMNI provides more accurate taxonomic abundance measures for these and other archaeological molluscan assemblages with similar taxa. These results have implications for the quality of zooarchaeological data increasingly utilised by conservation biologists, historical ecologists and policy makers.

SZABO, K., AND KOPPEL, B., (2015) Limpet shells as unmodified tools in Pleistocene Southeast Asia: an experimental approach to assessing fracture and modification. *Journal of Archaeological Science* vol. 54: 64 – 76

Pleistocene tools manufactured in shell are rarely identified. This may in part be due to the complexity of shell as a raw material and associated challenges in recognising and interpreting shell modification. A series of unusually-shaped *Scutellastra flexuosa* limpets from c. 30,000 year old deposits in Golo Cave, eastern Indonesia were identified as putatively modified during midden analysis. A pilot programme of investigations into the microstructure and natural fracture patterns of this species, coupled with a series of use-wear experiments, demonstrates that some *S. flexuosa* shells were used as scrapers. The shells were used in unmodified form and were ‘repurposed’ after having been gathered for subsistence purposes. Taken together with other forms of early shell-working already reported for Golo Cave, the identification of these new unmodified shell tools expands the corpus of shell tool use at the site and presents a picture of diversity and complexity not seen in the associated lithic assemblage.

**SEA PEOPLE 2014: ARCHAEOLOGY OF MARITIME HUNTER-GATHERERS: FROM SETTLEMENT TO FUNCTION
TO THE ORGANISATION OF THE COASTAL ZONE. RENNES, FRANCE 10-11TH APRIL 2014**

DUPONT, C¹⁶., AND MARCHAND, G¹⁷



Maritime hunters-gatherers are diversified populations who exist all around the world. They have been the subject of much attention from anthropologists, in part because of the high variety of social organization that they exhibit worldwide. The diversity of their technical knowledge, whether related to fishing or to food preservation and storage, provides another focus of attention. Archaeologists have also developed a strong interest in these populations, known by their shell-middens along marine or estuarine seashores. So the aim of SeaPeople2014 was to gather together researchers, that are rarely have the occasion to meet, from different disciplines and areas to exchange their field works and hypotheses.

A total of 26 lectures and three posters were presented by archaeologists, biogeochemists and archaeozoologists from 8 nationalities (England, Denmark, Spain, France, Japan, Portugal, Russia and Sweden). New data from field works and syntheses were proposed from Palaeolithic to Neolithic concerning archaeological contexts and also ethnological examples. These researches were localized in several seas and oceans in Spain, France, Portugal, China, Japan, Patagonia, French Antilles, Angola, Mauritania, England, Oman, Arabian Sea, Russia and Sweden.

The conference began by a short introduction by the organizers on the diversity of maritime hunters-gatherers existing and on the scientific interest to re-excavate shell-middens along the European façade. The allocutions started by a keynote lecture given by N. Bicho (Algarve, Portugal) on the importance of prehistoric coastal adaptations for European Pleistocene human evolution. This presentation sets the scene of the first papers (J.M. Pétillon, E. Álvarez-Fernández *et al.*, V. Laroulandie *et al.*, D. Cuenca Solana, P. Arias *et al.*, J. E. Aura Tortosa *et al.*) on the so-called coastal paradox or new paradigm showing that coastal adaptations represent specific lifestyles from the Palaeolithic. The daily life of Palaeolithic people was also described after direct or indirect witnesses involving different archaeological disciplines (archaeozoology, traceology...).

A focus was also given on the dependence upon marine resources of some costal Mesolithic populations (A. C. Araújo, G. Marchand *et al.*, I. Gutiérrez-Zugasti *et al.*, R. Schulting). The presence of marine food is so visible that some of these maritime populations can be called “hunter-fisher-gatherers” (I. Gutiérrez-Zugasti *et al.*). This definition is deeply linked to involved techniques by these prehistoric populations (Billard *et al.*). Adaptations are sometimes so developed that they help people to resist to extreme coastal environmental conditions (C. Lefèvre *et al.*). The accessibility of food resources, sometimes cyclic, also played a part in human organization (D. Bonnissent *et al.*). The archaeological structures obtained are diversified (N. Valdeyron). Through study cases presented we can see the diversity of adaptation of such maritime hunter-gathers that can live set back from the coast (R. Guilbert-Berger *et al.*).

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“The transition from a hunter-gatherer way of life to an agro-pastoralist one is supposed to entail major changes in lifestyles mainly concerning food procurement strategies” (M. Diniz). But the frontier between hunter-gatherer and agro-pastoralist is not so obvious and the introduction of agriculture did not stop drastically the consumption of seafood and can impact the daily organization of maritime people (A. Zazzo *et al.*, P. Wallin, A. N. Popov *et al.*). The maritime populations had to adapt to landscape transformations (L. Peng *et al.*, R. Vernet). Some of these palaeoenvironmental changes are linked to climatic variations (J.F. Berger *et al.*). They can have an effect on maritime adaptation and Human migration (H. Kato, G. Momber *et al.*).

This symposium showed the diversity of maritime hunters-gatherers and also of other maritime populations. It underlined also the complexity to understand a site as a unique fact. “To understand these complex sites that often include dates from a time span of several hundreds of years they need to be deconstructed in its different activities both vertical and horizontal.” (P. Wallin). It underlined the importance of the inter-disciplinarily to understand these human population that can adapt differently to the variations of marine environments.

The proceedings (papers and posters) will be published in a conference volume in English or French. They will be published on-line with a free access on the web site of the Société préhistorique française in the Section “Séances de la Société préhistorique française”. The symposium was supported by the European project 'Arch-Manche' (Interreg IVA 2 Mers, fonds FEDER), the SeaMeso project of the MSHB, the OSUR, the French Ministry of Culture, the Brittany region and Beta Analytic Associate and Séance de la Société Préhistorique Française approved.

12TH ICAZ CONFERENCE, SAN RAFAEL, ARGENTINA 22-27TH SEPTEMBER 2014

NATACHA BUC AND ANNALISA CHRISTIE

There were two dedicated malacology sessions and numerous shell-based research papers presented at the 12th ICAZ Conference held in San Rafael. The first specific shell session “Molluscs as a record of human-environment relationships: Environmental Reconstructions, Impacts and Management”, hosted by Christina Giovas, Zhanna Antipushina, and Catherine West explored how molluscs could be used as a record of human-environment relationships. It documented the range of approaches to conduct palaeo-environmental reconstruction using shell assemblages from archaeological contexts, examining this in the context of modern shell populations. The papers and posters presented detailed research from around the world were presented, highlighting the diversity and global scope of malacological projects.

For the second session, “Global patterns in the exploitation of animal-based raw materials: technological and socio-cultural issues” coordinated by Natacha Buc, Annalisa Christie, Alice Choyke, and Vivian Scheinsohn, the ICAZ Archeomalacology and Worked Bone Research groups joined forces to explore the use of shell, bone and other animal products as raw material. This session aimed to elucidate the global similarities and differences in the ways animal materials were exploited in the past.

18 contributions were presented from researchers of 10 different countries, in oral and poster presentations. They discussed identification of raw material, manufacture and use of tools and ornaments, either in archaeological, ethnographic and experimental samples. Animal hard materials included bone, antler, shells and pearlshells. In choosing appropriate raw materials craftspeople would have considered traditional notions about their natural qualities and ascribed characteristics. With materials from living beings the traditions may become tightly entwined with the behavior and location of the creatures they come from.

FORTHCOMING CONFERENCES – SAVE THE DATES IN YOUR DIARY

The AEA Spring Conference, the Professional Zooarchaeology Group (PZAG) and the Archaeomalacology Working Group will be holding consecutive meetings at the Archaeology Institute, in Kirkwall, Orkney Island. There will be a wine reception and plenary lecture on the evening of Friday the 1st of April, followed by the one-day **AEA spring conference** on the **2nd of April**. The **PZAG meeting** will be held on the **3rd of April**, with an optional field trip for those wishing to explore more of Orkney. The Archaeomalacology Working Group meeting will then take place from the 5th – 9th of April. Further details and a call for papers will be announced in due course.

ISLANDS: ISOLATION AND CONNECTIVITY - AEA SPRING CONFERENCE

2ND APRIL 2016

The notion of the island as a laboratory, as a world in microcosm with well-defined boundaries, is an appealing and long established cliché. For almost two centuries, we have explored the distinctive biological and historical trajectories of different islands, and have identified a variety of ‘island effects’; on plants and animals and on human communities. Such work demonstrates that many islands offered distinctive potentials (and barriers) for social and ecological development. That said, research has often struggled to deal with a number of crucial problems; issues of scale and influence, of biogeography, connectivity and sustainability, that we are often ill-equipped to explore. This meeting provides a context in which to take a critical look at some of the premises upon which island-based work has often been undertaken, and asks some fairly fundamental questions. Is it helpful to think of islands as isolated or remote? Was the sea a barrier or a medium of movement and communication? How should we understand the place that island communities occupied in broader worlds? How did the nature of that wider articulation change over time and how was it manifest differently for individual communities/species? Most important of all, how should we reconcile the local details of colonisation, adaptation and (even) abandonment within broader processes of environmental and social change? Structured around the theme of isolation and connectivity, this meeting will give us a chance to look at some of these crucial concerns, with contributions from archaeobotany to zooarchaeology, from biomolecular analyses to climatology, and from landscape to seascape. Although this meeting will take place in the Northern Isles, there is no geographic restriction on submissions: by presenting papers set in various diverse ‘conceptual islands’ and island groups we hope to draw together and share methodologies and discussions.

ARCHAEOMALACOLOGY WORKING GROUP WORKSHOP

5 – 9TH APRIL 2016

The diverse implications of examining malacological assemblages in archaeological contexts are widely recognized. From understanding past environments and reconstructing palaeo-landscapes to exploring past subsistence strategies; and from elucidating socio-cultural dynamics of maritime interactions to the use of shell as raw materials in both technological and cultural spheres, shellfish play an important part in archaeological narratives. This workshop plays two roles: first to present current archaeomalacological research from around the world – demonstrating the above. The second aims to discuss and develop more standardized approaches to taxonomic classification, collection, quantification and analysis of shell assemblages and reporting techniques. While there is a vast array of archaeological examination of shell remains, current outputs lack appropriate standardization, making cross-cultural or inter-site analysis difficult – something that will become increasingly detrimental to the discipline. The AMWG has reached a critical mass whereby such standardization should become practical and possible.
